

REMARKS

Claims 1-19 are all the claims pending in the application.

I. Prior Art Rejections

The Examiner rejected claims 1-5, 8-12, 15-17, and 19 under 35 U.S.C. § 103 as allegedly being unpatentable over Meisburger (US Pub No. 2005/0041229) in view of Johnson (US Pat. No. 6, 638, 390). Applicant respectfully traverses the 35 U.S.C. § 103 rejection of claims 1-5, 8-12, 15-17, and 19.

The following remarks for patentability are for independent claim 1, but apply by analogy to independent claims 8 and 15.

The Examiner has alleged that the spatial light modulators (SLM) 120 and light pipes (alleged microlens array) 415, in Meisburger, reads on the spatial light modulation (SLM) and microlens array, as recited in claim 1. The Examiner conceded that Meisburger fails to teach or suggest moving the SLM or microlens array. In an attempt to compensate for the deficiencies of Meisburger, the Examiner applied Johnson for moving or shifting the microlens 102 in accord with a detected offset amount to prevent overlapping of the pattern as detected by a detector array 105. Further, the Examiner maintains that the motivation for combining the references is that one would be motivated to shift the microlens of the Meisburger device to prevent poor resolution caused by overlapping of the pattern, and indicates the processing unit determines the amount of shift for the microlens array.

First, Meisburger fails to teach or suggest a microlens array, as recited in claim 1.

Regarding Meisburger, the light pipe 415 is generally called an integrator or flyeyelens, and the purpose thereof is to increase the uniformity of light irradiated to an SLM. Therefore, the effect of light pipe 415 is different from that of the claimed microlens array.

Also, there is no description about microlenses, in Meisburger, except in paragraph [0009], which describes that "the blurring can be implemented by ... adding a microlens array between the SLM and the substrate". Additionally, no element corresponding to a microlens is shown in the drawings.

In other words, while the alleged microlens, of Meisburger, is described in the context of use in a lithography device, it has the function of blurring an image. Therefore, the alleged microlens, in Meisburger, cannot be said to read on the microlens array disclosed in claim 1.

Second, the combined teachings of Meisburger and Johnson fail to teach or suggest a shift amount detection section for detecting an offset amount of (between) relative positions of the light beams which have been modulated by the modulation elements and the corresponding microlenses.

Regarding Johnson, a microlens array is described that has the purpose of changing a relationship between the phase of an image surface and the phase on a detector array by moving the microlens array. The effects obtained by Johnson are completely different, and thus, the influence of microlens array offset detected by the shift amount detection section is not disclosed in Johnson. Even assuming, *arguendo*, if Johnson's detector array were replaced with an SLM, the influence of the offset of the claimed SLM and microlens array are not rendered unpatentable.

In particular, the Examiner applied Johnson for allegedly moving or shifting the microlens 102 in accord with a detected offset amount to prevent overlapping of the pattern as detected by a detector array 105. However, Johnson does not detect an offset in the light beam position between the modulation elements of the SLM and the corresponding microlenses of the microlens array, as recited in claim 1. Moreover, to the extent Johnson pertains to alignment, it is understood that the alignment relates to a target substrate, such as a wafer and a pixel detector. Johnson is concerned about determining the diffraction pattern incident on the detector array 105 via the microlens array 102 (col. 4, lines 30-40), which is unrelated to and different from the offset amounts between elements in the SLM and microlens in claim 1, where the offset amounts result from mispositioning. Indeed, Johnson, concerned with the microlens array 102 and the detector array 105, is not even comparing the same devices, and therefore, Johnson makes no disclosure about a relationship between an SLM and microlens array. The Examiner is mistakenly considering the problem of overlapping light reaching nearby pixels in the detector array 105, in Johnson, as an offset amount, when the overlapping light is a result of diffraction, such as phase interactions, but the overlapping light is not a result of misalignment between light beams from modulation elements (SLM) and corresponding microlens (microlens array), as recited in claim 1.

Accordingly, Johnson (combined with Meisburger) does not teach or suggest a position adjustment section which finely adjusts position of at least one of the spatial light modulation device and the microlens array on the basis of the detected offset amount, as recited in claim 1. In particular, there is no explicit disclosure, in Johnson, for adjusting the microlens array based on the offset amount. Applicant recognizes that the wafer position is controlled by the servo

control system (col. 4, lines 23-26), and in a different embodiment, the object surface 101 is shifted in Fig. 10 (col. 7, lines 54-61). However, there is no shifting of the microlens array 102, in Johnson, based on an offset amount that is determined from light beam positions of the modulation elements of the SLM and the corresponding microlenses of the microlens array.

Third, since Meisburger only discusses that a microlens array is used to cause blurring (paragraph [0009]), there is no motivation to combine the references in the manner suggested by the Examiner. That is, one skilled in the art would not be motivated to shift the microlens of the Meisburger device to prevent poor resolution caused by overlapping of the pattern, as described in Johnson, when Meisburger uses the microlens array to cause blurring.

For at least the foregoing reasons, the combined teachings of Meisburger and Johnson fail to render the subject matter of independent claims 1, 8, and 15 unpatentable. Therefore, the § 103 rejection of claims 1-5, 8-12, 15-17, and 19 should be withdrawn.

II. Allowable Subject Matter

The Examiner objected to claims 6, 7, 13, 14, and 18 as being dependent upon a rejected base claim. Applicant holds in abeyance the rewriting of objected to claims 6, 7, 13, 14, and 18, and believes that the presence response should place this application in condition for allowance.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/807,310

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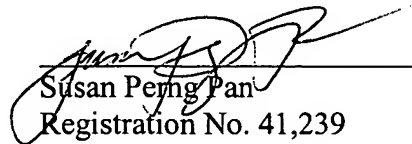
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